

# THE MINERAL INDUSTRIES OF BHUTAN AND NEPAL

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## BHUTAN

Bhutan is a landlocked country that lies between China and India in South Asia. In 2004, Bhutan's economy was based on agriculture and forestry, which contributed 40% and 10%, respectively, of the gross domestic product (GDP); inflation was moderate at 4.5%. The economy was closely aligned with that of India through trade—which included exports of hydroelectric power—and financial assistance. The country's key resources were its attractiveness to tourists and its hydropower potential. Construction of many hydropower projects drove the rapid GDP growth of 7% in 2004. The country's underdeveloped mineral industry was limited to the production of only a few industrial minerals (International Monetary Fund, 2005<sup>1</sup>).

The Department of Geology and Mines was responsible for conducting geologic mapping, exploring mineral resources, and providing geotechnical and geoscience-related services. The Geological Survey of Bhutan carried out monitoring and mitigation of natural and geologic hazards that are prevalent in the Himalayas. The Mining Division was responsible for inspecting the mines and for drafting regulations that ensure environmentally-friendly use of economic mineral resources in Bhutan (Department of Geology and Mines, 2005§).

Bhutan's mineral reserves of dolomite, limestone, and quartzite are considered to be large. Most dolomite, gypsum, and limestone were mined for the manufacture of calcium carbide and cement. Quartzite was mined for the production of ferrosilicon and microsilica. Most industrial minerals mining was done by privately owned companies that operated in the southern part of the country. Bhutan Ferro Alloys Ltd. operated an 18,000-metric-ton-per-year (t/yr) ferrosilicon plant using Norway's Elkem technology at Pasakha, which is located 180 kilometers (km) south of Thimphu. The company was owned by Tashi Group of Bhutan (55%), the Ministry of Trade and Industry (25%), Marubeni Corp. of Japan (12%), and Japan International Development Organization (8%). Coal was mined on a small scale at Bhangstar and exported to the neighboring states of Bangladesh and India (South Asian Business, 2004§).

## Internet References Cited

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## Major Source of Information

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## NEPAL

Nepal's GDP growth was about 3.5% in 2004. The country, which was among the poorest nations in the Asia and the Pacific region, had a per capita GDP of \$1,402 based on purchasing power parity. Although earnings from tourism fell during the year, a surge in the inflow of private remittances from Nepalese nationals working overseas, which totaled \$850 million in 2004, drove the country's economic growth. Investment in Nepal by Indian businesses also was on the rise. As a result, foreign exchange reserves increased enough to cover merchandise imports (Far Eastern Economic Review, 2004).

Nepal's mineral deposits are small in size and include cobalt, copper, iron, lead, limestone, magnesite, mica, and zinc. Exploration and exploitation of mineral resources were difficult owing to the country's steep mountainous terrain. In 2004, the mineral industry was dominated by the production of cement, clay, coal, limestone, magnesite, and marble. Three cement companies exploited four limestone deposits. Orient Magnesite Ltd. mined a magnesite deposit in the Dolkha District intermittently to produce 50 metric tons of dead-burned magnesia in 2004. Godavari Marble Industries Ltd. produced brown, pink, and white marbles from its deposit in the Lalitpur District (South Asian Business, 2004§).

An agreement was signed between the Government and Cairn Energy plc of the United Kingdom to explore for petroleum in five areas of Nepal. Two separate agreements were signed to explore the Tarai plains and the Chure hills. Exploration activities would be carried out in the Dhangadi region in the far west, in the Karnali region in the mid-west, in the Lumbini area of the western region, and

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<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited sections.

in the Birgunj and Malangwa areas of the central region. Exploration would have to be done within 4 years; two grace periods of 2 years each could be added. Following the signing of the agreement, Cairn Energy was to submit a detailed project plan within 30 days, set up its offices in Nepal within 90 days, and start its exploration activities; the Government would receive \$250,000 per year as rent (Rigzone.com, 2004§).

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South Asian Business, 2004, Nepal profile, accessed June 2, 2005, at URL <http://www.southasianbusiness.org/southasia/countryprofiles/nepal/nepalprofile24.htm>.

### **Major Source of Information**

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TABLE 1  
BHUTAN AND NEPAL: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Country and commodity <sup>3</sup>	2000	2001	2002	2003	2004
<b>BHUTAN</b>					
Cement	150,000	160,000	160,000	160,000	170,000
Coal	67,000	65,000	65,000	66,000	67,000
Dolomite	260,000	265,000	270,000	270,000	275,000
Ferrosilicon	15,000	16,000	21,000	21,000	20,000
Gypsum	54,000	55,000	55,000	56,000	56,000
Limestone	278,000	280,000	282,000	285,000	288,000
Marble square meters	4,000	4,000	4,000	4,000	4,000
Quartzite	52,000	53,000	53,000	54,000	55,000
Slate square meters	9,000	9,000	9,000	9,000	9,000
Talc	3,700	3,800	3,900	3,900	3,900
<b>NEPAL</b>					
Cement	300,000	285,000	290,000	295,000	300,000
Clay, red	2,304 <sup>4</sup>	2,700	2,600	32,966 <sup>r,4</sup>	29,234 <sup>4</sup>
Coal:					
Bituminous	17,530 <sup>4</sup>	16,589 <sup>4</sup>	9,612 <sup>4</sup>	11,848 <sup>r,4</sup>	10,459 <sup>4</sup>
Lignite	52 <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	58 <sup>4</sup>
Total	17,582 <sup>4</sup>	16,589 <sup>4</sup>	9,612 <sup>4</sup>	11,848 <sup>r,4</sup>	10,517 <sup>4</sup>
Gemstones:					
Quartz kilograms	2,830 <sup>4</sup>	1,135 <sup>4</sup>	1,720 <sup>4</sup>	1,765 <sup>r,4</sup>	1,215 <sup>4</sup>
Tourmaline do.	1 <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>
Total do.	2,831 <sup>4</sup>	1,135 <sup>4</sup>	1,720 <sup>4</sup>	1,765 <sup>r,4</sup>	1,215 <sup>4</sup>
Lime, agricultural	19,360 <sup>4</sup>	15,587 <sup>4</sup>	20,000	13,025 <sup>r,4</sup>	-- <sup>4</sup>
Magnesia, dead-burned	1,640 <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	-- <sup>4</sup>	50 <sup>4</sup>
Salt thousand metric tons	2 <sup>4</sup>	5 <sup>4</sup>	5 <sup>4</sup>	5 <sup>4</sup>	4 <sup>4</sup>
Steel, rolled	120,000	110,000	100,000	100,000	95,000
Stone:					
Limestone	352,060 <sup>4</sup>	287,810 <sup>4</sup>	356,218 <sup>4</sup>	269,379 <sup>r,4</sup>	388,109 <sup>4</sup>
Marble:					
Chips	655 <sup>4</sup>	607 <sup>4</sup>	537 <sup>4</sup>	395 <sup>r,4</sup>	481 <sup>4</sup>
Slab, cut square meters	79,700 <sup>4</sup>	54,834 <sup>4</sup>	46,156 <sup>4</sup>	46,197 <sup>r,4</sup>	56,014 <sup>4</sup>
Craggy do.	1,530 <sup>4</sup>	1,333 <sup>4</sup>	2,279 <sup>4</sup>	681 <sup>r,4</sup>	728 <sup>4</sup>
Quartzite	2,800	2,800	2,800	2,900	2,900
Talc	5,852 <sup>4</sup>	3,923 <sup>4</sup>	2,621 <sup>4</sup>	6,905 <sup>r,4</sup>	3,435 <sup>4</sup>

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Includes data available through August 23, 2005.

<sup>2</sup>Estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>In addition to the commodities listed, crude construction materials, such as sand and gravel and a variety of stone, presumably are produced in Bhutan and Nepal, but information is inadequate to make reliable estimates of output levels.

<sup>4</sup>Reported figure.